

REMARKS

The Office action mailed August 23, 2005, has been received and its contents carefully noted. The pending claims, claims 1-3, were rejected. Reconsideration in view of the following comments is respectfully requested.

Rejection under 35 U.S.C. 102(b)

The Examiner rejected claim 1 under 35 U.S.C. 102(b) as being anticipated by Inoue et al. (US 5,423,931). The Examiner also rejected claim 1 as being anticipated by Ward (US 3,735,911). Specifically, the Examiner deemed that Inoue et al. and Ward each teach a flip chip bonder with a chuck table which can be moved, take and take out areas, a cutting area with a cutting tool and a chip conveying means.

Applicants note that prior to the present invention, stud bumps were ground, or a heated plate was pressed against the stud bumps in order to make them uniform in height. Unfortunately, these methods result in burrs and crushed heads of the bumps. See Specification on page 1, line 15 to page 2, line 15. Applicants' invention overcomes these problems.

To appreciate the operation of Applicants' invention, reference will be made to Figs. 8-11, and corresponding explanation on pages 10-12 of the specification. Stud bump electrodes 100 are formed on chip 10 by melting metal wire such as gold, as shown in Figs. 9(a) - 9(c). After the gold ball 103 drops unto electrode plate 110 and the capillary device 101 is removed, each electrode 100 has a "wisker" 104 that is different (in height) from the other electrodes. Applicants' recited "cutting means" has the responsibility of cutting the plurality of electrodes 100 "to make them uniform in height." The result (uniform height) is shown in Fig. 11.

Applicants respectfully submit that Inoue et al. discloses a method and apparatus for removing a semiconductor device 1 from a board 4 to which the semiconductor device 1 is secured by a resin 3. Applicants submit that Ward discloses an integrated circuit repair tool for removing a chip 52 bonded to a substrate 24, or newly bonding the chip 52 to the substrate.

Contrary to Inoue et al., the present invention is a flip chip bonder for bonding a semiconductor chip called a "flip chip" to a substrate. As part of the bonding, it is important for

the present invention to have the recited “cutting means having a cutting tool for cutting a plurality of electrodes projecting from the front surface of the semiconductor chip held on a chuck table and arranged in the electrode cutting area to make them uniform in height.”

Nowhere does Inoue et al. teach or suggest Applicants’ cutting means. In teaching removal of a semiconductor device from a board, Inoue et al. simply do not suggest preparation of the chip for bonding by cutting whiskers or the like from stud bump electrodes so that the electrodes will have the same height. Ward also fails in regard to Applicants’ cutting means. While understood to also teach bonding of a chip to a substrate, Ward still does not teach or suggest Applicants’ recited cutting means. Therefore, nowhere do Inoue et al. or Ward teach that a flip chip bonder is provided with a cutting means according to the present invention.

Applicants respectfully submit that the claims, as amended, are novel and that both rejections under 35 U.S.C. 102(b) should be withdrawn.

Rejection under 35 U.S.C. 103(a)

The Examiner rejected claim 2 under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. in view of Hernandez et al. (US 5,263,620). This rejection also traversed because Hernandez et al. does not remedy the deficiencies of Inoue et al. with respect to claim 1. Thus, the asserted combination of Inoue et al. and Hernandez et al. does not result in the claimed invention, and does not render it obvious.

Since a prima facie case of obviousness has not been established, Applicants respectfully urge that the claims, as amended, also are unobvious and that the rejection under 35 U.S.C. 103(a) should be withdrawn.

Obviousness-Type Double Patenting Rejection

The Examiner rejected claims 1-3 under the doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of copending Application 10/820,853. Specifically, the Examiner deemed that it would have been obvious that a machine for processing a plate like workpiece with electrodes having the same structure would be capable of processing a flip chip.

Applicants respectfully request this rejection be held in abeyance until an indication of allowable subject matter.

Request for Interview

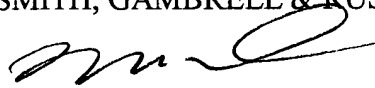
Applicants' representative looks forward to a telephonic interview with the Examiner in January of 2006, as planned with the Examiner.

CONCLUSION

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, in the event that additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. §1.136(a), and any fees required therefor are hereby authorized to be charged to **Deposit Account No. 02-4300**, Attorney Docket No. **033773M068**.

Respectfully submitted,
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Date: December 16, 2005

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